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ABSTRACT

As Phase I of a comprehensive evaluation of the NASA-affiliated Langley Research Center's (LaRC) scientific and technical information (STI) program, an internal survey was conducted to obtain feedback from LaRC scientists and engineers concerning the effectiveness of the STI program. The first stage of the survey, which involved interviews with 64 randomly selected LaRC engineers and scientists, was intended to gather information for use in questionnaire development. The second stage involved data collection by means of a questionnaire submitted to LaRC scientific personnel assigned to the Aeronautics, Electronics, Structures, and Space Directorates. Responses were compiled and analyzed in groups corresponding to the various aspects of Langley STI services addressed by the survey: the technical review process, the research review process, the perceived image of LaRC STI Services, LaRC publication guidelines, research support services, and scientific and technical products and services. Recommendations based on the findings are made for each topic area. Data are presented by topic areas and summarized in 22 tables. Included are a reference list and six appendices, among which are the project plan for review of LaRC services and a copy of the survey instrument. (Author/JI)

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A Review and Evaluation of the Langley Research Center's Scientific and Technical Information Program

Results of Phase I - Knowledge and Attitudes Survey, LaRC Research Personnel

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INTRODUCTION

A comprehensive review and evaluation of the Langley Research Center's scientific and technical information (STI) program was conducted. The purpose of the review and evaluation was to determine the extent to which the program was meeting the needs of Langley research personnel and the recipients of Langley-generated STI, the areas of the program which needed improvement, and the ways in which the program could be modified to improve its overall efficiency and effectiveness. The goal of the review and evaluation project was to determine if the dissemination of the Center's research output could be made more effective.

The project utilized both survey research and systems analysis techniques. A steering committee composed of one representative from each research division was used to develop the objectives and guide the project through its completion. The individual tasks required to accomplish the objectives were established and were included as phases in the project plan which is Appendix A of this report. The results of Phase I - Knowledge and Attitudes Survey, LaRC Research Personnel are contained in this report.

STATEMENT OF THE PROBLEM

During the 63-year history of the Langley Research Center, a comprehensive review and evaluation of the Center's STI program had never been conducted. Portions of the Langley STI program had received periodic or occasional assessment; however, no valid empirical data existed which could be used to evaluate the overall program.

Purpose of the Study

The purpose of Phase I was to evaluate the effectiveness of the Langley STI program in meeting the needs of Langley research personnel. Phase I utilized survey research to assess the knowledge of and attitudes toward the Langley STI program held by the internal user population. The results of the survey provided an assessment of the adequacy of the NASA Langley STI program in meeting the needs of Langley engineers and scientists both as information producers and as information users.

Objectives of the Study

Six objectives were established for Phase I. These objectives were to

1. Assess the attitudes of researchers relative to the technical editing committee and the supervisory review process;
2. Ascertain the availability of and attitudes toward the guidelines used for publishing Langley STI;
3. Assess the adequacy, quality, and timeliness of research support services provided by the Technical Library Branch, the Photographic Branch, the Graphics Branch, the Publications Branch, and the Technical Editing Branch;
4. Gather data for the perceived image of Langley STI, reference-ability, technical quality, readability, adequacy of data, timeliness of publication, and adequacy of distribution;
5. Determine the familiarity with and use of selected STI products and services; and
6. Identify areas of the Langley STI program which are in need of change or improvement.

Setting for the Study

The Langley Research Center (LaRC) is one of the leading national laboratories for research and development in the sciences of aeronautics and space technology. Founded in 1917, Langley was the nucleus of the former National Advisory Committee for Aeronautics (NACA). For more than 60 years, Langley engineers and scientists have conducted basic and applied research in fluid and flight mechanics, flight systems, structures and materials, acoustics and noise reduction, measurements and instrumentation systems, data systems, and space and Earth sciences. For calendar year 1979, Langley's research population of 1,330 engineers and scientists produced 1,06 items, which included 186 NASA formal series technical publications; 116 NASA quick-release Technical Memorandums; 149 journal articles; and 610 speeches, lectures, and presentations. The documented research output of the Langley Research Center is processed through the Langley Scientific and Technical Information Program, which is an integral part of the NASA Scientific and Technical Information System.

Importance of the Study

An evaluation of the Langley STI program which included an attitudinal survey of Langley engineers and scientists had never been conducted. The needs of the information user must be viewed as an essential aspect of the evaluation of an information system. The feedback obtained from the questionnaires established a base line which could be used in future evaluative efforts and could be re-administered as part of an on-going evaluation of the Langley STI program.

Scope of the Study

The study was limited to (1) the scientific and technical information output of the Langley Research Center as processed through the Langley STI program; (2) books, periodicals, and research specifically concerned with scientific and technical information; (3) studies, audits, and correspondence specifically concerned with the Langley STI program; (4) research concerning the NASA STI program which directly affected the Langley STI program; and (5) completed questionnaires received from the research population. The research population consisted of engineers and scientists assigned to the Aeronautics, Electronics, Structures, and Space Directorates. The study spanned the period from April to September 1980.

GLOSSARY

IAA	International Aerospace Abstracts
LaRC	Langley Research Center
MSD	Management Support Division
n	Sample Size
NACA	National Advisory Commiteee for Aeronautics
NASA	National Aeronautics and Space Administration
NMI	NASA Management Instruction
ODU	Old Dominion University
P	Population Proportion
p	Sample Proportion
RECON	Remote Console
SCAN	Selected Current Aerospace Notices

STAR	Scientific and Technical Aerospace Reports
STI	Scientific and Technical Information
STIPD	Scientific and Technical Information Programs Division
TEC	Technical Editing Committee

RELATED RESEARCH AND LITERATURE

The review of related research and literature emphasized that periodic evaluation was essential to the management of information systems. When properly conducted, evaluation disclosed the strengths and weaknesses of the system, suggested ways to improve the overall performance of the system, and ultimately improved the efficiency and/or effectiveness of the system (King and Bryant, 1971). The literature emphasized that the total evaluation of an information system encompassed all the program objectives and employed a variety of management tools and techniques (Swanson, 1975). It was established that the information needs of the user were a necessary dimension in the evaluation process (Debons and Montgomery, 1974).

Since its inception, various aspects of the NASA STI system were evaluated. These evaluative studies were both programmatic and user oriented. The programmatic studies were concerned with funding levels, manpower authorization, and the location of the STI function within the NASA organization (Duberg, 1973). The user studies sought to determine the effectiveness of the NASA STI system by obtaining feedback from the user population (Drobka, 1973; Burr, 1978; and Monge, 1979). These studies determined the level of use and familiarity with the products and services; determined the value of the products and services as an information tool or aid; and led to the expansion, revision, and creation of STI products and services.

EVALUATION OF THE LANGLEY STI PROGRAM

The Langley Research Center STI program is an integral part of the Agency's STI system and is responsible for implementing Agency and Center policies concerning the management of STI. Expeditious publication of the Center's research output is Langley's contribution to the Agency's goal of timely dissemination of NASA research. The documented research output of the Center is processed through the Langley Scientific and Technical Information Programs Division (STIPD). In

addition, the Publications Branch of STIPD provides in-house printing for NASA Headquarters, Scientific and Technical Information Branch. This service is provided for the entire Agency and involves the publication and dissemination of NASA's formal series technical publications.

Since 1970, a series of audits and studies has been conducted for portions of the Langley STI program. These audits and studies were reviewed and are discussed in this section.

Audits

The NASA Management Audit Office at the NASA Langley Research Center conducts periodic audits of the various LaRC management functions. These audits are conducted under the authority and responsibility contained in NASA Management Instruction (NMI) 1130.7.

Technical Library Branch Audit. In May 1971, the NASA Management Audit Office conducted a review of the Center's Technical Library Branch. The primary objectives of the review were (1) to determine the extent of library utilization and responsiveness to the needs of Center personnel; (2) to evaluate the library's procedures, practices, and controls for ordering, collecting, distributing materials, and for performing reference services; and (3) to evaluate the library's interface with the overall NASA Scientific and Technical Information System.

The audit included discussions with responsible library personnel and selective tests of library records and files through February 20, 1971. The review focused primarily on the effectiveness of the NASA/RECON reference system, the library's utilization of LaRC computer facilities; and the efficiency of the systems for ordering, receiving and routing books, periodicals, documents, and microfiche.

The audit revealed that one-third of the book collection was on loan with no return date specified. It was recommended that all books be returned to the library for inventory and that a loan period be established for the return of all books and reports. It was further recommended that a central book cataloging system for all NASA books be instituted and eventually operated through RECON. A multi-year subscription to pertinent periodicals was recommended to take advantage of typically lower charges per year under this arrangement (LRC-DU-66-71).

Photographic Branch Audit. In July 1971, the NASA Management Audit Office conducted a review of the Center's Photographic Branch. The primary objective of the review was to evaluate the utilization of manpower and equipment within the Photographic Branch and to evaluate the adequacy of controls over the use of photographic film and equipment by the LaRC staff.

The review included observations of the photographic operations, discussions with the Head of the Photographic Branch and Photographic Branch personnel, an analysis of photographic production statistics, and an examination of equipment pool loan records. In addition, the review also included photographic film and equipment usage for several users outside the Photographic Branch and the usage of Polaroid film in detail, since large withdrawals from stock were noted.

The review reported satisfactory use of manpower and equipment, recommended improvements in record-keeping for the lending of film and equipment, and established a dollar value for existing equipment and supplies. The review further stated that the photographic equipment pool should be relocated within the Instrument Control Group, Instrument Research Division, and that limitations be placed on the use of photographers as projectionists (LRC-DU-104-71).

Photographic Branch Audit. In October 1977, the NASA Management Audit Office conducted another review of the Center's Photographic Branch. The primary objective of the review was to evaluate the Photographic Branch's management and its ability to effectively, efficiently, and economically support Langley's research programs and other operations. In addition, the review investigated the sufficiency of work authorization and the control system; controls and utilization of supplies, facilities, and equipment, the necessity for contractual photographic support; and compliance with Center, Agency, and federal policies, regulations, and directives.

The review included observations of the photographic operations and discussions with Photographic Branch personnel and personnel of other Center organizations who requested work from the branch or who were custodians of photographic equipment. In addition, equipment, supply, and manpower records and production statistics were reviewed and analyzed.

The review reported the satisfactory operation of the Photographic Branch, with a very efficient flow of work in and out of the photographic facility. The review further stated that work orders (Form 58) should contain appropriate information and approvals, that participation in the silver recovery program should be expedited, that contractual photographic support be redefined, and that a study be undertaken to ascertain the utilization of project equipment (LARC-MA-13-77).

Printing and Technical Editing Audit. In August 1973, the NASA Management Audit Office conducted a review of the Center's printing and technical editing activities. The primary objective of the review was to appraise the adequacy of management systems and practices employed at Langley in the editing, printing, and distribution of NASA publications and to identify activities warranting more detailed audit effort. In addition, the review investigated the effectiveness and economical operation of printing and reproduction services, the adequacy of controls over color printing and expensive or unusual printing requirements, the effectiveness of the authorization system for obtaining printing, and the conformity of printing operations to Government Printing and Binding Regulations as established by the Joint Committee on Printing.

The review included observations of the printing and technical editing operations, discussions with Publications Branch and Technical Editing Branch personnel, and discussions with personnel within the Office of Scientific and Technical Information Programs (now STIPD) and the Office of the Director for Center Development and External Affairs. In addition, the review included an examination of production records; work-in-progress reports; and appropriate policies, procedures, and directives.

The results of the review showed that technical editing and printing operations were generally adequate and effective. An in-depth review of the report processing procedure for NASA Langley formal series technical publications was conducted to determine why 50 percent of these reports were not published within the 180-day time cycle established by Langley Announcement 110-71. It was reported that an excessive and disproportionate amount of time was expended in the Technical Editing Committee review. It was recommended that time goals and limitations be established for each principal area of report processing. It was further suggested that the responsibility for

enforcing the limitations be delegated to a Center official who has responsibility for each principal area. In addition, the review suggested that consideration be given to the appointment of a full-time Report Coordinator and Expeditor (LRC-DU-88-73).

The Dewhirst Study. During the summer of 1970, H. Dudley Dewhirst, an ASEE-NASA Summer Fellow, conducted an evaluation of the LaRC Technical Library from the users viewpoint. Dewhirst maintained that service to the patron was the most important evaluative criterion and that a high volume of usage of an information source indicated that the source was accessible and of good quality. The purpose of the study was to (1) establish levels of usage for parts of the library collection, library tools, and services; (2) document use of staff help; and (3) evaluate the role of the Technical Library within the context of the total information system available to users. Two questionnaires were used to obtain the data.

Responses to the questionnaires, which were partially patterned after those used by Rosenbloom and Wolek (1967), were received from 340 researchers and administrators. Comparing the levels of Langley use to those established by Rosenbloom and Wolek (1967) and others, Dewhirst concluded that the LaRC library was doing an excellent job of making quality information sources highly accessible to users. In Dewhirst's study, as in Gerstberger and Allen (1968), perceived accessibility emerged as the primary criterion by which information sources were selected. The study revealed a widespread and strong dislike for microfiche, which was not considered as accessible as information on paper. In a question which elicited recall of a difficulty experienced in using the library, 49 percent of the respondents mentioned microfiche. The library book collection was viewed as inaccessible by a number of respondents. Dewhirst established that the average book loan was 40 months and suggested the specification of a 6-month loan period.

Levels of familiarity and use of NASA announcement services were documented: STAR - use, 77 percent, familiarity without use, 11 percent; CSTAR - use, 54 percent, familiarity without use, 20 percent; IAA - use, 54 percent, familiarity without use, 17 percent; SCAN - use, 24 percent, familiarity without use, 51 percent. The use of RECON a "few times/year or more often" was reported by 33 percent of the respondents. A highly favorable evaluation of

the efficiency and cooperativeness of the staff was reported, and the Technical Library was perceived as playing a major role in providing essential information to its users.

The Auerbach Study. In 1975, Auerbach Associates, Inc., (McGeehan, et. al., 1975), conducted a systems analysis of the Langley Technical Library. The purpose of the systems analysis was to identify methods for meeting increased demands despite reduced manpower and money resources. A thorough analysis of the overall function and internal operations of the library was completed. An analysis of the interface between the library and its users and between the library and the library committee was performed. The position of the library within the Center's organizational structure was also examined.

Observation, operating data, and interviews with the staff, researchers, and administrators were used during the analyses. The Auerbach study recommended a major change in function for the library from operation as a document depository to operation as an information center. A transition into library ownership and control of all documents was suggested as a method for achieving significant increase in document access. A higher degree of mechanization and computer support and modest changes in organization and responsibility were recommended for the six subsystems of internal operation.

To examine the interface between the library and its users, interviews were conducted with 36 researchers and 14 administrators. Use of the library and other organizational libraries, as well as use of colleagues as information sources, was documented. It was recommended that the library serve as the focal point for access to non-NASA information centers and resources and educate its users concerning its capabilities. In addition, a role change for the library committee was recommended. The committee had responded to library management problems only. A change to an active role in presenting the needs of the research staff was proposed.

After an analysis of library operations and the Center organizational structure, the Auerbach study recommended that the library become a separate division, the Information Support Division, rather than remain as a branch under the Management Support Division. The library could then assume responsibility for a program focused on the objective of informed, efficient researchers rather than on the objectives of efficient operations and resource management.

The Auerbach study recommendations were based on the premise that the best method for meeting increased demands in a limited resource environment requires a change to an information center function, with the emphasis on the maximum use of existing services by informed users.

Other Studies

In addition to the audits, other less formal studies related to the Langley STI program were conducted. These studies were reviewed and those relevant to this report are presented in this section.

The Martin Study. In 1976, a study to assess and evaluate the graphics activity at the Langley Research Center was undertaken by Dennis J. Martin, then Chief of the Scientific and Technical Information Programs Division. The purpose of the study was to (1) ascertain and describe the amount and quality of graphics support at the Center, (2) objectively evaluate the information collected, and (3) make recommendations based upon an evaluation of the information and material collected. The study utilized a 10-item closed-ended questionnaire which was sent to each research division, branch, section, and project office. In addition, the respondents were encouraged to comment and make recommendations.

The results of the study indicated that (1) the size of the graphics staff was the smallest of the NASA research centers and was inadequate in terms of meeting the requirements of the researchers; (2) the demand for slides and viewgraphs had increased in recent years because of participation by Langley engineers and scientists in external conferences, meetings, and symposiums; (3) the graphics function had become decentralized with many research organizations expending research funds for the purchase of graphics materials, equipment, and supplies; (4) Langley engineers and scientists were devoting a substantial amount of their time to the preparation of visual material; and (5) a substantial amount of overtime was required by the Technical Illustrating Section (now Graphics Branch) to meet deadlines.

The recommendations of the study were that (1) the Technical Illustrating Section be elevated to branch status, (2) the function of the section be changed so as to become the focal point for all graphics activities, (3) the in-house graphics staff be increased through one of several methods, (4) the section be relocated near the Photographic Branch, (5) the head of Graphics become the

authorizing official for the purchase of graphic art equipment and material, and (6) the head of Graphics approve the layout of all material to be printed.

The Anderson Study. In 1980, a study to assess the research environment and productivity of the Langley Research Center was undertaken by Roger A. Anderson, formerly Chief of the Structures and Dynamics Division. The purpose of the study was to investigate the research environment at Langley and to seek ways to increase innovation and remove impediments to research activity. The study utilized small group interviews in which the following topics were covered: (1) research activity, (2) stimuli to research, (3) management and supervision, (4) organizational support and attitudes, and (5) compensation and recognition. A total of 115 individuals from 13 research divisions were interviewed. The interviewees included both recent hirees and experienced researchers.

The results of the study indicated that most researchers (1) desired an increase in communication, cooperation, collaboration, and mobility across organizations, and (2) requested assistance of branch and division heads in reducing the encroachment of administrative tasks into the time available for research. In addition, the interviewees indicated that maintaining the number and effectiveness of research support personnel and strengthening the commitment to basic and focused research was paramount.

The recommendations of the study which were of significance to this report included comments directed toward the editorial review process, the practices used for rehearsing STI presentations, and orientation programs. Anderson reported that researchers in some research organizations reported severe frustration resulting from complex and inconsistent editorial review and presentation rehearsal practices. Anderson recommended that a standard method for conducting these processes be developed and established for all research organizations and that a comprehensive orientation program, including an explanation of the publication and presentation processes, be offered to all new employees.

SUMMARY

Since 1970, a series of audits and studies were conducted for portions of the Langley STI program. While portions of the Langley STI program had been reviewed and/or evaluated, a comprehensive evaluation of the program had not been undertaken. The audits suggested changes in the operation of certain research support services. For the most part, the audits reported satisfactory operation of these facilities and effective use of manpower and equipment. The printing and technical editing audit indicated that the 180-day time cycle established for publishing NASA Langley formal series technical publications was not being met. The audit revealed that a disproportionate amount of time was expended in the Technical Editing Committee review. A study of the research environment indicated the existence of complex and inconsistent editorial review policies and practices. Another study was critical of the Graphics support and indicated that more in-house manpower was needed.

RESEARCH METHODOLOGY AND PROCEDURE

The study utilized survey research to obtain feedback from Langley engineers and scientists assigned to the Aeronautics, Electronics, Structures, and Space Directorates. The study was conducted in conjunction with the firms of Edward M. Cross, D.B.A., and Continental Research. Professional research assistance was utilized to establish and ensure objectivity and confidentiality, to maintain the integrity of the study, and to obtain research skills not readily available to the project.

Research Methodology

The methodology for the survey portion of the study was based on the work of Fishbein and Ajzen (1975). This methodology combined the semantic differential technique, taken from communication research, with the concepts of classical and operant conditioning, taken from learning theory. (For a discussion of these concepts, see Hilgard and Brower, 1966.) This methodology has been used to assess attitudes toward such diverse topics as using birth control pills (Jaccard and Davidson, 1972), voting for a political candidate (Fishbein and Coombs, 1974), and buying consumer products (Sheth and Talarzyk, 1972).

While others have employed similar approaches (Tolman, 1932; Edwards, 1954; and Rosenberg, 1956), Fishbein's approach is currently the most widely used.

Research Procedure

Stage 1 of a two-stage survey procedure included personal interviews with 64 randomly selected Langley engineers and scientists. A letter, signed by the Director of the Langley Research Center and presented in Appendix B, was sent to each of the selected engineers and scientists asking that an appointment for a one-half hour interview be made. The interviews were held in the Langley Technical Library during regular working hours. The first nine interviewees were used to test the interview format. From these first nine interviews, changes were made as necessary and the interview format finalized. The questions used in the interview format are presented in Appendix C.

Personal interviews with 55 Langley engineers and scientists were conducted by professional interviewers from Continental Research. Responses were taped or recorded as close to verbatim as possible. The responses were collected and tallies were made of the number of times a particular impression was obtained. The most frequently mentioned impressions were considered salient for the group, thus forming the basis for questionnaire development.

Stage 2 involved the collection of data through the construction of a survey questionnaire containing open and closed-ended questions. The questionnaire was prepared and administered by Continental Research and approved by the project director's team. A letter signed by the Chief, STIPD (presented in Appendix D) transmitted the draft questionnaire to 40 randomly selected engineers and scientists to be pretested for relevance and clarity. Copies of the questionnaire were reviewed by members of the steering committee for recommendations and the elimination of ambiguity.

The survey questionnaire contained 50 closed-ended questions and 3 open-ended questions. The open-ended questions were listed on a separate sheet and were included as a supplement to the questionnaire. The questions elicited the respondents' knowledge of the NASA STI system and attitude toward the Langley STI program and employed a five-point attitude scale response. In addition, demographic material was solicited in the areas of publication history, years of work experience at LaRC, and participation in the technical review process.

The final version of the survey questionnaire and a letter of transmittal signed by the Director of the Langley Research Center are presented in Appendix E.

The survey questionnaire was sent to all engineers and scientists assigned to the four research directorates who had not participated in either the personal interviews or the pretest of the questionnaire. The respondents were instructed to write "not applicable" and return the questionnaire if none of the survey items applied to them. A total of 710 survey questionnaires were returned to Continental Research. (The rate of return was approximately 76 percent.) Of the questionnaires returned, 63 were either marked "not applicable" or were incomplete. From the 647 valid questionnaires, a sample of 300 was randomly selected and analyzed. These responses were summarized and are presented in Appendix F.

Statistical Significance

When a sample is randomly selected from a population, the characteristics of the population may reasonably be inferred from the attributes of the sample. Such inference is then subject to various conventions regarding statistical significance. The appropriate application of such conventions to the primary survey effort (n = 300) is called "Estimation of Parameters." The population parameter, in this case a population proportion (P), is estimated from a sample proportion (p). Such estimates are dependent in part upon sample size. The sample sizes vary from question to question because all respondents did not answer each question. However, given the general range of sample sizes and the nature of the sampling distribution of proportions, it can be stated conservatively that at the 95 percent confidence level, the true population proportion (P) lies within 6 percent of the sample proportion (p), that is, $P = p \pm 6$ percent.

PRESENTATION OF THE DATA

The responses to the closed-ended and open-ended questions were presented for each survey topic. Three hundred thirty-six responses were received to the open-ended questions. The results were compiled and were included according to the survey topic to which they applied. The numbers contained in each table

represent the percentage of respondents who registered an opinion to the question. Two sets of numbers appear under the column marked "absolute numbers." The first indicates the number of respondents who registered "no opinion;" the second represents the number of "no opinion" responses expressed as a percentage of the sample (n = 300). For discussion purposes, the headings "very" and "somewhat" were combined.

Survey Topic 1: The Technical Editing Committee and the Technical Review Process

Langley engineers and scientists were asked to respond to three questions which pertained to the Technical Editing Committee and the Technical Review Process used for NASA Langley formal series technical publications. The responses were summarized and are presented in Table A.

TABLE A

Summary: The Technical Editing Commitee and Technical Review Process

		PERCENTAGES						ABSOLUTE NUMBERS	
		VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION	
1. Technical Editing Committee members who review NASA formal series publications take the task	Seriously	44	50	2	3	1	Lightly	33	11%
2. Technical Editing Committee members who review my research for accuracy and content are	Qualified	38	54	5	3	0	Unqualified	47	16
3. Significant revision of the technical review process is	Necessary	11	23	20	23	23	Unnecessary	46	15

n = 300

Ninety-four percent of the respondents indicated that the Technical Editing Committee members took their task seriously. Furthermore, 92 percent of the respondents indicated that the Technical Editing Committee members were qualified to perform reviews for accuracy and content. Thirty-four percent of the respondents indicated that a significant revision of the technical review process was necessary, while 46 percent of the respondents indicated that a revision of the technical review process was unnecessary.

Of the 336 responses to the open-ended questions, 110 (33%) related to the review process. The two main comments received were (1) that the review process takes too long and (2) that the review prior to the Technical Editing Committee was inadequate.

Survey Topic 2: Research Review Process (Reports, Articles, and Meeting Papers)

Langley engineers and scientists were asked to respond to three questions which pertained to the research review process used by the various research divisions for technically reviewing other types of research publications. The responses were summarized and are presented in Table B.

TABLE B

Summary: The Research Review Process

		PERCENTAGES						ABSOLUTE NUMBERS	
		VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION	
4. The "chain of command" review (e.g., branch head, division chief, etc.) is	Necessary	39	41	7	9	4	Unnecessary	17	6%
5. Regarding deadlines, the individuals in the "chain of command" review are	Sensitive	17	44	13	20	6	Insensitive	24	8
6. Significant revision of the technical review process used by my division is	Necessary	14	20	24	22	20	Unnecessary	29	9

n = 300

Eighty percent of the respondents indicated that the "chain of command" review was necessary. The respondents generally expressed confidence in the sensitivity of their division's chain of command toward their deadlines, but 26 percent indicated that their particular chain of command was insensitive. Moreover, 34 percent of the respondents indicated that a revision of the technical review process used by their respective division was necessary.

Survey Topic 3: LaRC Publication Guidelines

Langley engineers and scientists were asked to respond to six questions which pertained to LaRC publication guidelines. The responses were summarized and are presented in Table C.

TABLE C

Summary: LaRC Publication Guidelines

			PERCENTAGES						ABSOLUTE NUMBERS	
			VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION	
7.	Publication guidelines are	Available	47	42	4	5	2	Unavailable	27	9%
8.	The guidelines are	Clear	29	48	9	9	4	Unclear	31	10
9.	The guidelines	Facilitate Publishing	15	37	36	10	2	Inhibit Publishing	40	13
10.	An LaRC handbook, containing guidelines for all publications and secretarial instructions, is	Necessary	49	29	11	5	6	Unnecessary	22	7
11.	Periodic orientation lectures explaining the publication process to research personnel are	Necessary	12	30	18	18	22	Unnecessary	12	4
12.	An individual in each research organization who thoroughly understands these guidelines is	Necessary	43	29	11	6	10	Unnecessary	18	6

n = 300

Eighty-nine percent of the respondents indicated that the guidelines were available, and 77 percent of the respondents indicated that the guidelines were clear. Fifty-two percent of the respondents indicated that the guidelines facilitated publication, while 12 percent indicated that the guidelines inhibited publication. Regarding an LaRC STI handbook, 78 percent of the respondents indicated that a handbook was necessary. As to the question of periodic orientation lectures explaining the publication process to research

personnel, 42 percent of the respondents indicated such lectures were necessary, while 40 percent indicated that periodic orientation lectures were unnecessary. As for the need to have an individual in each research organization who thoroughly understood the publication guidelines, 72 percent indicated their support for the idea.

Thirty-three respondents commented on publication guidelines in the open-ended questions. The comments indicated that (1) a handbook for publications containing precise guidelines was needed, (2) a handbook for publishing computer programs was needed, (3) guidelines for conference papers should be established, and (4) a revision of the NASA formal technical publication series to include computer programs should be considered.

Survey Topic 4: Research Support Services

Langley engineers and scientists were asked to respond to 22 questions which were used to assess the adequacy, quality, and timeliness of the research support services provided by the Technical Library Branch, the Photographic Branch, the Graphics Branch, the Publications Branch, and the Technical Editing Branch. Questions pertinent to each organization were presented and analyzed separately.

Technical Library Branch. Five questions were used to elicit attitudes toward the Technical Library Branch and its performance. The results were summarized and are presented in Table D.

TABLE D

Summary: Technical Library Branch

			PERCENTAGES						ABSOLUTE NUMBERS	
			VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION	
13.	In assisting researchers, the staff is	Cooperative	83	13	3	1	0	Uncooperative	15	5%
14.	The library coverage (collection) in my research field is Specify field _____	Adequate	57	32	5	4	1	Inadequate	24	7
15.	Materials in the collection are provided	Quickly	48	40	7	5	0	Slowly	12	4
16.	Materials requiring interlibrary loan are provided	Quickly	23	41	17	12	7	Slowly	75	25
17.	Materials to be purchased are provided	Quickly	0	26	21	24	22	Slowly	70	23

n = 300

Ninety-six percent of the respondents indicated that the library staff was cooperative in assisting researchers. Only one respondent considered the library staff uncooperative. Library coverage was rated adequate by 89 percent of the respondents. Eighty-six percent of the respondents indicated that materials from within the collection were provided quickly. Sixty-four percent of the respondents indicated that interlibrary loan materials were provided quickly. Thirty-four percent indicated that purchased materials were provided quickly, and 46 percent indicated that such materials were not provided quickly.

Eight respondents to the open-ended questions recommended the establishment of a deadline policy for all loan materials. Three respondents requested instructions on library use.

Photographic Branch. Four questions were used to elicit attitudes toward the Photographic Branch and its performance. The results were summarized and are presented in Table E.

TABLE E

Summary: Photographic Branch

		PERCENTAGES						ABSOLUTE NUMBERS
		VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION
18. The staff's suggestions are	Useful	39	41	17	2	0	Useless	64 21%
19. Photographic turnaround is	Fast	28	42	17	8	5	Slow	36 12
20. Regarding deadlines, the staff is	Sensitive	44	41	7	7	1	Insensitive	45 15
21. Photographic work is	Satisfactory	54	32	8	5	1	Unsatisfactory	32 11

n = 300

Eighty percent of those responding rated the suggestions made by the staff of the Photographic Branch as useful. Similarly, 86 percent of the respondents rated the work performed by the staff as satisfactory. Seventy percent of the respondents indicated that Photographic turnaround was fast. Eighty-five percent of the respondents indicated that the staff was sensitive to deadlines.

Graphics Branch. Four questions were used to elicit attitudes toward the Graphics Branch and its performance. The results were summarized and are presented in Table F.

TABLE F

Summary: Graphics Branch

		PERCENTAGES						ABSOLUTE NUMBERS	
		VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION	
22.	The staff's suggestions are	Useful	45	41	10	3	1	Useless	72	24%
23.	Graphic turnaround is	Fast	17	45	19	14	5	Slow	63	21
24.	Regarding deadlines, the staff is	Sensitive	39	41	12	6	2	Insensitive	64	21
25.	Graphic Services are	Satisfactory	43	35	11	8	3	Unsatisfactory	62	21

n = 300

Eighty-six percent of the respondents rated the suggestions made by the staff of the Graphics Branch as useful. Sixty-two percent of the respondents indicated that turnaround was fast, and 19 percent thought that turnaround was slow. Eighty percent of the respondents indicated that the staff was sensitive to deadlines, and 78 percent indicated that the services provided by the staff were satisfactory.

Fifty-seven respondents to the open-ended questions indicated that an increase in the size of the in-house Graphics staff was necessary. Ten of those respondents specified that an increase in the in-house staff was needed rather than the utilization of additional contractors. The other 47 respondents expressed the need for a Graphics' person to be permanently assigned directly to each research division.

Publications Branch. Four questions were used to elicit attitudes toward the Publications Branch and its performance. The results were summarized and are presented in Table G.

TABLE G

Summary: Publications Branch

			PERCENTAGES						ABSOLUTE NUMBERS	
			VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION	
26.	The staff is	Cooperative	48	36	10	5	1	Uncooperative	28	9%
27.	Regarding deadlines, the staff is	Sensitive	42	42	7	7	2	Insensitive	31	10
28.	Printing/Reproduction turnaround is	Fast	36	45	12	4	3	Slow	26	9
29.	Printing/Reproduction work is	Satisfactory	46	42	8	2	2	Unsatisfactory	24	8

n = 300

Eighty-four percent of the respondents indicated that the staff of the Publications Branch was cooperative. Likewise, 84 percent of the respondents indicated that the staff was sensitive to deadlines. Eight-one percent of the respondents indicated that turnaround time was fast, and 88 percent indicated that the work performed by the staff was satisfactory.

Technical Editing Branch. Five questions were used to elicit attitudes toward the Technical Editing Branch and its performance. The results were summarized and are presented in Table H.

TABLE H

Summary: Technical Editing Branch

			PERCENTAGES						ABSOLUTE NUMBERS	
			VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION	
30.	Technical Editing turnaround is	Fast	16	46	24	11	2	Slow	70	23%
31.	Regarding deadlines, the staff is	Sensitive	34	49	13	3	0	Insensitive	80	27
32.	Staff suggestions for improving form, grammar, and punctuation are	Satisfactory	50	39	9	1	0	Unsatisfactory	69	23
33.	The staff makes my papers	Easy to Read	28	45	25	1	1	Difficult To Read	71	24
34.	The intended meaning of sentences is	Unchanged	38	37	20	4	1	Changed	69	23

n = 300

Sixty-two percent of the respondents indicated that the staff of the Technical Editing Branch provided fast turnaround. Likewise, 83 percent indicated that the staff was sensitive to deadlines. Eighty-nine percent of the respondents indicated that the suggestions made by the staff for improving form, grammar, and punctuation was satisfactory. Furthermore, 73 percent indicated that changes made by the staff made the reports easier to read. Seventy-five percent of the respondents indicated that the intended meaning of the sentences was unchanged by the staff's revisions.

Twelve respondents to the open-ended questions indicated that editorial help should be supplied directly to authors throughout the review and publication process. Six respondents stated that in-house typing was inadequate, and five respondents recommended that word processors be made available to authors.

Survey Topic 5: Perceived Image of LaRC Scientific and Technical Information

Langley engineers and scientists were asked to respond to eight questions which pertained to perceived image, referenceability, technical quality, adequacy of data, timeliness of publication, and adequacy of distribution for Langley STI. The eight questions used for this survey topic were subgrouped. Each subgroup was analyzed and is presented separately.

Perceived Image of Langley STI. Three questions were used to elicit responses relative to the perceived image of Langley STI. The results were summarized and are presented in Table I.

TABLE I

Summary: Perceived Image of Langley STI

		PERCENTAGES						ABSOLUTE NUMBERS	
		VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION	
35. When compared to other journal articles in my discipline, the prestige of LaRC-authored journal articles is	High	34	36	20	7	3	Low	58	19%
36. When compared to other literature in my discipline, the prestige of LaRC formal series publications (e.g. TP's, TM's, etc.) is	High	26	30	17	15	12	Low	42	14
37. As journal references in my field of research, LaRC formal series publications are	Acceptable	53	30	10	5	3	Unacceptable	41	14

n = 300

Seventy percent of the respondents considered Langley-authored journal articles to be prestigious when compared to other journal articles in the respondent's discipline. Fifty-six percent of the respondents indicated that the prestige of Langley formal series technical publications was high when compared to other literature in their discipline. On the other hand, 27 percent of the respondents indicated that Langley formal series technical publications held

lesser prestige than other literature in the discipline. Eighty-three percent of the respondents indicated that Langley formal series technical publications were acceptable as journal references in their discipline.

Quality, Content, and Format of Langley Formal Series Technical Publications. Three questions were used to elicit responses relative to the quality, content, and format of Langley formal series technical publications. The results were summarized and are presented in Table J.

TABLE J

Summary: Quality, Content, and Format of Langley Formal Series Technical Publications

		PERCENTAGES						ABSOLUTE NUMBERS	
		VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION	
38. The quality of the material produced through the review and publication process is	High	35	47	14	3	0	Low	33	11%
39. The organization (format) of LaRC formal series publications makes readability	Easy	32	46	17	4	1	Difficult	28	9
40. The data in LaRC formal series publications are	Sufficient	40	43	14	3	0	Insufficient	41	13

n = 300

Eighty-two percent of the respondents indicated that the quality of material produced through the review and publication process was high. Seventy-eight percent indicated that the format of Langley formal series technical publications made readability easy. Eighty-three percent of the respondents indicated that sufficient data were included in Langley formal series technical publications, while only 3 percent indicated that the data were insufficient.

Timeliness and Distribution of Langley Formal Series Technical Publications. Two questions were used to elicit responses relative to the timeliness of publication and adequacy of distribution. The results were summarized and are presented in Table K.

TABLE K

Summary: Timeliness and Distribution of Langley Formal Series Technical Publications

		PERCENTAGES						ABSOLUTE NUMBERS	
		VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION	
41. After being written by the author, LaRC formal series documents are published	Quickly	7	27	23	28	16	Slowly	44	15%
42. Distribution within my discipline of LaRC formal series publications is	Adequate	18	37	19	16	10	Inadequate	53	17

n = 300

Respondents were asked if Langley formal series technical publications were published quickly or slowly once completed by the author. Thirty-four percent of the respondents selected "quickly," while 44 percent selected "slowly." On the question of distribution, 55 percent of the respondents indicated that distribution within their discipline was adequate. On the other hand, 26 percent indicated that distribution was inadequate for their discipline.

Survey Topic 6. Scientific and Technical Information (STI) Products and Services

Langley engineers and scientists were asked to respond to six questions which pertained to NASA STI products and services. The six questions used for this topic were subgrouped. Each subgroup was analyzed and is presented separately.

Orientation to and Importance of NASA STI Products and Services. Two questions were used to elicit responses relative to the need for training sessions to orient research personnel to NASA STI products and services and to ascertain the importance of NASA STI products and services to the conduct of research. The results were summarized and are presented in Table L.

TABLE L

Summary: Orientation to and Importance of NASA STI Products and Services

		PERCENTAGES						ABSOLUTE NUMBERS	
		VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION	
43. Training sessions to orient research personnel to NASA STI products and services are	Necessary	20	35	23	11	11	Unnecessary	46	14%
44. In my research work, NASA STI products and services are	Important	33	38	21	4	3	Unimportant	Unfamiliar With 52	16

n = 300

Fifty-five percent of the respondents indicated that training sessions to orient research personnel were necessary, while 22 percent indicated that training sessions were unnecessary. Seventy-one percent of the respondents indicated that NASA STI products and services were important in the conduct of research.

Regarding orientation, 16 respondents to the open-ended questions stated that a thorough orientation to research STI products was needed, as well as an orientation to research support services. Four respondents wanted a means of identifying all sources of STI products and services.

Use of and Familiarity With NASA STI Products and Services. Four questions were asked to determine the respondents' use of and familiarity with selected NASA STI products and services. The results were summarized and are presented in Table M.

TABLE M

Summary: Use of and Familiarity With NASA STI Products and Services

	PERCENTAGES				ABSOLUTE NUMBERS	
	ALWAYS	USUALLY	SOMETIMES	NEVER	Unfamiliar With	
45. When I do research, I use STAR (Scientific and Technical Aerospace Reports), the NASA announcement journal for report literature	18	37	37	8	25	8%
46. When I do research, I use IAA (International Aerospace Abstracts), the NASA announcement journal for periodicals, meeting papers, and conference proceedings	15	31	41	14	36	12
47. When I do research, I use SCAN (Selected Current Aerospace Notices), a NASA current awareness publication	16	16	39	29	92	29
48. When I do research, I use RECON, NASA's computerized, online, interactive system for information search and retrieval	17	20	48	15	55	18

n = 300

With respect to STAR, 18 percent of the respondents indicated they "always" used STAR, while 74 percent "usually" or "sometimes" used STAR in their research. As for IAA, 15 percent of the respondents indicated they "always" used IAA, while 72 percent "usually" or "sometimes" used IAA in their research. Sixteen percent of the respondents indicated they "always" used SCAN, while 55 percent "usually" or sometimes" used SCAN in their research. Thirty-seven percent of the respondents indicated they "always" used RECON, while 68 percent of the respondents "usually" or "sometimes" used RECON in their research. Non-use for SCAN was indicated by 29% of the respondents, and non-use for RECON by 15% of the respondents.

Survey Topic 7: Demographic Information

The final set of questions, 49 through 57 and 60 through 71 on the survey instrument, was used to elicit demographic information about the respondents. The responses to each question were tabulated and reported separately.

Publishing. Respondents were asked to indicate how or where they published the results of their research. The responses were summarized and are presented in Table N.

TABLE N

Summary: Where Langley Engineers and Scientists Publish

Percentage	Where Published
12%	Did not publish
53	NASA Formal Series and Journals and Conferences/Meetings
2	NASA Formal Series and Journals Only
8	NASA Formal Series Only
7	Conferences/Meetings and Journals Only
14	NASA Formal Series and Conferences/ Meetings Only
1	Journals Only
3	Conferences/Meetings Only
100%	

Eighty-eight percent of the respondents published the results of their research. Fifty-three percent utilized all three media: NASA formal series technical publications, journal articles, and conference/meeting papers.

Attendance at Technical/Professional Conferences. Respondents were asked to indicate how many technical/professional conferences (other than ones held at LaRC) they had attended within the last 3 years. The responses were summarized and are presented in Table O.

TABLE O

Summary: Attendance at Technical/Professional Conferences During the Past 3 Years

Number of Conferences	Number of Respondents	Percent
None	85	28.3%
One	62	20.7
Two	73	24.3
Three	33	11.0
Four	14	4.7
Five	10	3.3
Six	14	4.7
Seven	1	0.3
Eight	3	1.0
Ten	2	0.7
Twelve	2	0.7
Fourteen	1	0.3
Total	300	100.0%

Twenty-eight percent of the respondents had not attended a technical/professional conference in the past 3 years. Seventy-two percent of the respondents had attended one or more technical/professional conferences during the past 3 years. Fifty percent of the respondents had attended two or more technical/professional conferences during the past 3 years.

Technical Editing Committee. Respondents were asked to indicate the number of times they had chaired and served on a technical editing committee during the past 3 years. The responses were summarized and are presented in Table P.

TABLE P

Summary: Chairmanship/Membership in Technical Editing Committees During the Past 3 years

Frequency	Number of Respondents	Chairman Percentage	Number of Respondents	Membership Percentage
None	206	68.7%	100	33.3%
One	63	21.0	60	20.0
Two	10	3.3	49	16.3
Three	8	2.7	43	14.3
Four	5	1.7	13	4.3
Five	3	1.0	15	5.0
Six	1	0.3	9	3.0
Seven	3	1.0	2	0.7
Eight	---	---	4	1.3
Nine	---	---	2	0.7
Ten	1	0.3	3	1.0
Total	300	100.0%	300	100.0%

Sixty-nine percent of the respondents had not served as the chairman of a technical editing committee. Thirty-three percent of the respondents had not served as a member of a technical editing committee. Thirty-one percent of the respondents had served one or more times as the chairman of a technical editing committee during the past 3 years, and 67 percent had served as a member of a technical editing committee during the past 3 years.

Use of NASA-Generated/Sponsored Research. Respondents were asked to indicate the percentage of NASA-generated and sponsored STI they had used in their research during the past 3 years. The results were summarized and are presented in Table Q.

TABLE Q

Summary: Use of NASA-Generated/Sponsored STI by LaRC Researchers

Percent of NASA Research used by AST's	Response	
	Number	Percent of Total
0%	29	9.7%
5	8	2.7
10	32	10.7
15	2	0.7
20	13	4.3
25	22	7.3
30	16	5.3
35	1	0.3
40	7	2.3
50	47	15.7
60	15	5.0
65	3	1.0
70	12	4.0
75	15	5.0
80	23	7.7
85	2	0.7
90	24	8.0
95	6	2.0
100	23	7.7
TOTAL	300	100.0%

Forty-one percent used NASA-generated/sponsored research more than 50 percent of the time. Sixteen percent used NASA-generated/sponsored research 50 percent of the time. Forty-three percent used NASA-generated/sponsored research less than 50 percent of the time.

Publishing and Professional Advancement. Respondents were asked if publishing the results of their research was important in terms of their professional advancement (promotion). The results were summarized and are presented in Table R.

TABLE R

Summary: Publishing and Professional Advancement

		PERCENTAGES						ABSOLUTE NUMBERS	
		VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION	
67. In terms of my professional advancement (promotion) at LaRC, publishing the results of my research is	Important	60	22	9	4	5	Unimportant	13	4%

n = 300

Eighty-two percent of the respondents indicated that publishing the results of their research was important to their professional advancement (promotion). Nine percent of the respondents indicated that publishing was unimportant in terms of their professional advancement.

Support of Publishing. Respondents were asked to indicate the extent to which supervisors, up through division level, were supportive of publishing through the NASA formal series. The results were summarized and are shown in Table S.

TABLE S

Summary: Support for NASA Formal Series Publications

								ABSOLUTE NUMBERS	
		VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY			
68. In regard to publishing through NASA formal series, supervisors, up through division level, are	Supportive	46	28	13	8	5	Nonsupportive	25	8%

n = 300

Seventy-four percent of the respondents indicated that supervisors were supportive of publishing through the NASA formal series. Thirteen percent of the respondents indicated that their supervisors were nonsupportive.

Years of Professional Experience at LaRC. Respondents were asked to indicate the years of professional work experience at LaRC. The responses were tabulated and are shown in Table T.

TABLE T

Summary: Years of Professional Experience at LaRC

Percentage	Years
4%	1-less
7	1-5
9	6-10
18	11-15
32	16-20
31	21 +
100%	

Eleven percent of the respondents indicated that they had worked at LaRC 5 years or less while 27 percent had worked at LaRC between 6 and 15 years. Sixty-three percent of the respondents indicated they had worked at LaRC 16 years or more.

Position Within the Research Organization. Respondents were asked to indicate their position within the research organization. The choices included individual contributor; Unit, Group, or Section Head; Branch Head/Assistant Branch Head; and Division Chief/Assistant Division Chief. The results are shown in Table U.

TABLE U

Summary: Position Within the Research Organization

Percentages	Position
77%	Individual contributor
14	Unit, Group, or Section Head
6	Branch Head/Assistant Branch Head
3	Division Chief/Assistant Division Chief
100%	

Seventy-seven percent of the respondents were individual contributors. Twenty-three percent served in a supervisory capacity.

Participation by Research Organization. The population, which totaled 1,036 LaRC engineers and scientists, was assigned to the Aeronautics, Electronics, Structures, and Space Directorates. From the population, a sample of 300 surveys was randomly selected for analysis. A breakdown showing the percentages of the population within each research division and the percentages of survey respondents by division is given in Table V.

TABLE V

Summary: Participation by Research Organization

Division	% of Total Population	% of Sample
ACD	6.8%	8.4%
IRD	6.2	7.7
FDCD	4.6	5.6
FED	10.3	12.7
TCVPO	.5	.7
MD	4.9	6.0
ANRD	4.0	5.0
SMD	3.8	4.7
LAD	4.3	5.3
ASD	1.8	2.3
FltMD	3.8	4.7
HSAD	8.2	10.1
STAD	6.6	8.2
AESD	3.9	4.9
SSD	6.2	7.7
MATD	4.3	5.3
*Other	19.8*	---
TOTAL	100.0%	99.3%

*Engineers and scientists not assigned to the Aeronautics, Electronics, Structures, and Space Directorates

The responses to question 71 closely match the actual breakdown of engineers and scientists at Langley. The breakdown provides a certain degree of assurance that a representative sample was selected.

FINDINGS

The findings were summarized and are presented for each survey topic. The following descriptors were used to present the findings.

Plurality	- the largest group, but less than half of the respondents
Substantial Minority	- an opposing response of 25% or more
Majority	- 50 to 59% of the respondents
Clear Majority	- 60 to 69% of the respondents
Strong Majority	- 70 to 79% of the respondents
Overwhelming Majority	- 80% or more of the respondents

Survey Topic 1: The Technical Editing Committee and the Technical Review Process

An overwhelming majority of respondents expressed satisfaction with the attitudes and qualifications of the individuals who performed the technical reviews for Langley formal series technical publications. A plurality of respondents did not consider significant revision of the technical review process used for Langley formal series technical publication to be necessary. A substantial minority, however, indicated that significant revision of the technical review process was necessary. The general reaction of the respondents to the open-ended questions was that the review process took too long and that the review prior to the meeting of the Technical Editing Committee (TEC) was inadequate.

Survey Topic 2: Research Review Process (Reports, Articles, and Meeting Papers)

An overwhelming majority of the respondents expressed strong agreement with the need for the "chain of command" reviews and a clear majority of respondents expressed confidence in the sensitivity of their "chain of command" toward their deadlines. A substantial minority, however, indicated that the supervisors were insensitive to their deadlines. A plurality of the respondents did not consider significant revision of the supervisor's review to be necessary. A substantial minority, however, indicated that significant revision of the supervisory review process was necessary.

Survey Topic 3: LaRC Publication Guidelines

An overwhelming majority of the respondents indicated that guidelines were available, a strong majority considered the guidelines to be clear, and a majority agreed that the guidelines facilitated publication. Three questions suggesting methods for increasing researchers' awareness of the publication guidelines and process produced mixed reaction. A strong majority indicated the necessity for a comprehensive publications handbook containing secretarial instructions. A plurality of respondents indicated that periodic orientation lectures explaining the publications process were unnecessary. A substantial minority, however, considered such orientation lectures to be necessary. A strong majority agreed that each research organization needed one individual who was thoroughly familiar with publication guidelines.

Survey Topic 4: Research Support Services

A strong majority of the respondents regarded the research support services as highly effective operations, and the staff members as cooperative, helpful and sensitive to the researcher's deadlines. The general reaction of the respondents to the open-ended questions was that an increase in the size of the in-house graphics staff was necessary and that a higher level of creativity was desired. A clear majority of the respondents were satisfied with the turn-around time provided by the Technical Library, Photographic Branch, Graphics Branch, Publications Branch (printing/reproduction), and Technical Editing Branch. However, responses to the Graphics and Technical Editing Turnaround times were slightly less positive. A plurality of respondents indicated that purchased library materials were not provided quickly.

Survey Topic 5: Perceived Image of LaRC Scientific and Technical Information(STI)

Overall, researchers registered a highly positive perception of the image of LaRC STI. An overwhelming majority indicated that Langley-authored formal series technical publications were acceptable as journal references and included sufficient data. An overwhelming majority also perceived that the review and publication process produced quality material. A strong majority perceived the prestige of Langley-authored journal articles as high and indicated that the format of formal series technical publications enhanced readability. A majority perceived the prestige of Langley-authored formal series technical publications as high and their distribution adequate, while a substantial minority considered

distribution to be inadequate. A plurality indicated that publication occurred slowly, while a substantial minority perceived the process to occur quickly.

Survey Topic 6: Scientific and Technical Information (STI) Products and Services

A strong majority indicated that NASA STI products and services were important in their research. An overwhelming majority used NASA-generated/sponsored STI in their research and registered use of STAR, IAA, RECON, and SCAN. However, a substantial minority indicated unfamiliarity with SCAN and RECON.

Survey Topic 7: Demographic Information

While an overwhelming majority of researchers had published the results of their research, a slight majority had not published within the past 3 years. A majority of researchers utilized three media (NASA formal series technical publications, journal articles, and conference/meeting papers) for disseminating the results of their research.

Questions concerning specific publication media, attendance at conference/meetings, and participation in technical reviews specified "within 3 years." A strong majority had attended a conference/meeting (other than ones held at LaRC). A clear majority had published a conference/meeting paper and served on a technical editorial committee.

An overwhelming majority indicated that publishing their research results was important to their professional advancement. A strong majority considered their supervisors supportive of their efforts to publish through NASA formal series technical publications.

A clear majority of researchers had been employed 16 years or more at LaRC. A strong majority were working as individual contributors rather than in a supervisory capacity.

CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis of the findings, recommendations were drawn for the study. Favorable attitudes constituted the majority opinion for each survey topic. These responses indicated, therefore, that the Langley

STI program is meeting the needs of Langley's engineers and scientists. Nevertheless, the findings revealed some areas of concern which warrant consideration. These concerns and recommendations are presented for six of the survey topics.

Survey Topic 1: The Technical Editing Committee and the Technical Review Process

Langley engineers and scientists appear to be satisfied with the attitudes and qualifications of the individuals who perform the technical reviews of Langley-authored formal series technical publications. The expressed concern of many respondents focused on the amount of time required to complete the process. While a plurality of the respondents indicated that no revision of the process is necessary, approximately 34 percent of the respondents indicated that better performance could be obtained through revision of the technical review process. With the underlying assumption that the integrity of the technical review process can be maintained and that publication of formal series publications can be accelerated through revision of the technical review process, an analysis of the technical review process appears warranted.

Recommendation: An analysis of the technical review process used to publish Langley-authored formal series technical publications should be undertaken as part of the Langley STI Review and Evaluation Project. The analysis should be comprehensive and should include an assessment of each aspect of the total publication process. Particular attention should be given to the number and sequence of steps involved in the process as well as the appropriateness/feasibility of the 180-day time cycle and the times established for the three phases of the process. Consideration should be given to establishing an oversight office with the responsibility for enforcing the time cycle and ensuring that publication of Langley-authored formal series technical publications is not unduly delayed. This oversight function could be delegated to the Office of the Chief Scientist.

Survey Topic 2: Research Review Process (Reports, Articles, and Meeting Papers)

Langley engineers and scientists appear to agree with the need for a "chain of command" review and to perceive that the individuals involved in the process were sensitive to their deadlines. However, approximately 26 percent of the respondents indicated that these individuals were insensitive. While a plurality of the respondents indicated that no revision of the process used within the divisons was necessary, approximately 34 percent of the respondents indicated that better performance could be obtained through revision of the within-division technical review process. This statement is strengthened by the results of the Anderson study which revealed that complex and inconsistent editorial review and presentation rehearsal practices existed within the various research divisions. Consequently, there appears to be a need to examine the within-division technical review process.

Recommendation: A study of the technical review process used within the various research divisions should be conducted. The study could be undertaken by the Management Analysis Branch of the Management Support Division (MSD) working in conjunction with the Office of the Chief Scientist. A comparison of the procedures and practices used by the "satisfied" and "dissatisfied" research divisions should be included as part of the analysis. If substantial differences are found, it would be worthwhile to suggest that "dissatisfied" research divisions adopt procedures similar to those used by the "satisfied" research divisions.

Survey Topic 3: LaRC Publication Guidelines

Langley engineers and scientists indicated that guidelines were available and were clear. Approximately 54 percent of the respondents indicated that the guidelines facilitated publishing. While a certain number of negative responses are to be expected with regard to any procedural guidelines, it does seem that the respondents' perception of the helpfulness of the guidelines is low. A strong majority of respondents indicated that a LaRC handbook, containing guidelines for all publications and secretarial instructions, is necessary.

Recommendation: A review of publication guidelines should be undertaken as part of the Langley STI Review and Evaluation Project. Guidelines should be developed for all STI media presently not covered. Existing guidelines should be evaluated to determine the extent to which they facilitate publishing. Where necessary, they should be streamlined. Guidelines should be incorporated into an STI publications handbook. The review and revision of existing guidelines, the development of additional guidelines, and the development of a comprehensive STI publications handbook should be jointly undertaken by STIPD and MSD.

While a plurality of engineers and scientists indicated that periodic orientation lectures explaining the publication process were unnecessary, approximately 33 percent of the respondents indicated that periodic orientation lectures were necessary. The minority opinion is strengthened by the recommendation of the Anderson study that a comprehensive orientation program, including an explanation of the publication and presentation process, be offered to all new employees. Since 88 percent of the respondents indicated that they had published the results of their research, in-depth understanding of the publication process by Langley engineers and scientists would appear to be a desirable goal.

Recommendation: STIPD should develop presentations which explain the publication process and should work with the various research divisions to make this process known. The presentations should be videotaped for use by individual or small groups of researchers. In addition, STIPD should work closely with the Training Branch of the Personnel Division to extend this presentation to all new hires.

A strong majority of engineers and scientists indicated that an individual in each research organization who thoroughly understands the publications guidelines was necessary. The establishment of such an individual appears to be a desirable goal. This individual would serve as an information source for all division authors, thus expediting the publication of the Center's research output.

Recommendation: The STI coordinators program used by STIPD should be expanded to include the training of STI coordinators in the publications process. These coordinators, who currently perform a variety of tasks

associated with the publication and dissemination of the Center's research output, should be directly involved in the development and streamlining of publication guidelines and the development of a comprehensive STI publications handbook.

Survey Topic 4: Research Support Services

Overall, Langley engineers and scientists appeared to be satisfied with the performance of the research support services. Certain concerns were identified for the individual support services which require closer examination.

Those aspects of library performance over which the library has total control were rated positively by the overwhelming majority of respondents. It is in the areas where a certain degree of dependency on external factors is involved that the library was not held in the highest regard. A plurality of respondents indicated that library materials to be purchased were provided slowly.

Recommendation: The system used for the purchase of library materials should be studied jointly by library and acquisitions personnel to document the amount of time required to purchase and receive library materials and to determine whether the time required can be reduced.

While a clear majority of respondents indicated that Graphics turnaround time was fast, this response was slightly less positive when compared to the other research support services. The general reaction of the respondents to the open-ended questions was that an increase in the size of the in-house Graphics staff was necessary and that higher levels of creativity were desired. This statement is strengthened by the conclusions of the Martin study which noted, among other things, that the size of the in-house Graphics staff should be increased.

Recommendation: The Langley Graphics function should be analyzed, with particular emphasis devoted to manpower, skill mix, and degree of artistic difficulty. The analysis of the Graphics function should be undertaken jointly by STIPD and the Management Analysis Branch of MSD.

While a clear majority of the respondents considered the turnaround time for Technical Editing to be satisfactory, this response was slightly less

positive when compared to the other research support services. In general, a higher level of "no opinion" responses were recorded for the Technical Editing questions. In light of the high number of respondents who had published, it is possible that a substantial number of authors had not taken advantage of the Technical Editing services or had published in a media which does not require interaction with Technical Editing Branch personnel. Responses to the open-ended questions suggested that editing/writing services be provided to authors prior to and during the review process.

Recommendation: A program should be developed by STIPD to acquaint engineers and scientists with the services provided by the Technical Editing Branch. Consideration should be given to expanding the services presently offered.

Survey Topic 5: Perceived Image of LaRC Scientific and Technical Information (STI)

An overwhelming majority of respondents indicated that the quality of the material produced through the review and publication processes was high. Overall, the prestige of Langley STI was perceived as high, but somewhat mixed reactions were recorded for the prestige of individual STI media.

A substantial minority of respondents indicated that Langley-authored formal series publications held lesser prestige in their disciplines and were less acceptable as journal references. This substantial minority also indicated that the prestige of Langley-authored journal articles was lower in their discipline. Since the overwhelming majority rated the quality of STI material high, the inference can be drawn that the minority respondents perceive the products to be viewed with less prestige by engineers and scientists outside of the Center.

Recommendation: A study to determine the acceptability of Langley-authored formal series technical publications should be undertaken by STIPD. The study should include contacts with editors of prominent journals, particularly those in the areas of research conducted by the minority respondents, to determine which journals do not accept Langley-authored formal series technical publications as references and to ascertain their reasons. Further, the study should determine whether Langley-authored formal series technical publications can be made more acceptable as journal references.

Langley engineers and scientists indicated that the organization (format) of Langley-authored formal series technical publications made readability easy and that the data contained in Langley-authored formal series technical publications was sufficient. A plurality of respondents indicated that, after being written by the author, Langley-authored formal series technical publications were published slowly. This statement supports the expressed concern of many respondents that the publication process takes too long. While a majority of respondents indicated distribution within their discipline of Langley-authored formal series technical publications was adequate, a substantial minority indicated that distribution within their discipline was inadequate. While these responses may reflect only a limited familiarity with the distribution procedure, rather than an objective evaluation of the distribution system's effectiveness, the question of distribution warrants further investigation.

Recommendation: As part of the Langley STI Review and Evaluation Project, the publications process for Langley-authored formal series technical publication should be examined. A stated purpose of the examination should be the reduction of time required to complete the process by the elimination of some steps prescribed for the process.

Recommendations: Several actions might be undertaken as a means of increasing the number of respondents who indicated that distribution was adequate. NASA Headquarters should be asked by Center management to undertake a study of the current philosophy and practices which underlie the NASA distribution program for formal series technical publications. In conjunction with such a study, STIPD should strive to develop a secondary distribution program for Langley-authored formal series technical publications. This program could be inaugurated by STIPD with the help of the STI coordinators and should include the compiling of a computerized mailing list containing the names of engineers and scientists in industry, academia, and government who are conducting similar research. Finally, consideration might be given by STIPD to increasing the number of author copies of Langley-authored formal series technical publications to the extent permitted by federal law and Agency regulation.

Survey Topic 6: Scientific and Technical (STI) Products and Services

Langley engineers and scientists perceived strongly that NASA STI products and services are important in their research. A majority of respondents indicated that training sessions to orient research personnel to NASA STI products and services were unnecessary. However, the numerous "unfamiliar with" responses to the questions regarding the use of STAR, IAA, SCAN, and RECON indicate the need for some form of orientation. Since all respondents were NASA research personnel, a clear need for improved means of familiarizing research personnel with NASA products and services appears to exist.

Recommendation: The Technical Library Branch of MSD, as part of its outreach program, should include orientation to STAR, IAA, SCAN, and RECON. Further, this program should contain provisions for determining why NASA products and services are not or cannot be used by some individual Langley engineers and scientists.

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APPENDIX A

A PROJECT PLAN FOR THE REVIEW AND EVALUATION OF THE LANGLEY RESEARCH CENTER'S SCIENTIFIC AND TECHNICAL INFORMATION PROGRAM

INTRODUCTION

One of the most important results of exploration and research and development is information. The National Aeronautics and Space Administration's scientific and technical information program system is one of the largest and best known federal STI programs in the country. The mission of the NASA STI is twofold: (1) to acquire worldwide research in aeronautics, space, and related disciplines to keep NASA personnel abreast of current activities and developments; and (2) to contribute to the expansion of STI through timely dissemination of NASA-generated and -sponsored research, development, testing, and technical evaluations. The Langley STI program is an integral part of the Agency's STI program and is responsible for implementing Agency and Center policies concerning the management of STI. Expeditious publication of the Center's research is Langley's contribution to the Agency's goal of timely dissemination of NASA research.

BACKGROUND

The Langley Research Center (LaRC) is one of the leading national laboratories for research and development in the sciences of aeronautics and space technology. Founded in 1917, Langley was the nucleus of the former National Advisory Committee for Aeronautics (NACA). For more than 60 years, Langley engineers, scientists, and technicians have been conducting basic and applied research in fluid and flight mechanics, flight systems, structures and materials, acoustics and noise reduction, measurements and instrumentation systems, data systems, and space and earth sciences. The results of this research are disseminated through NASA scientific and technical publications as well as non-NASA media such as technical or professional society journals and similar periodicals; domestic and foreign presentations of papers, talks, and lectures; and in the proceedings of conferences and symposia. For calendar year 1979, the output of the Center's 1,330 Aerospace Technologists (AST's) totaled 1,061 items which included 186 NASA formal series technical publications, 116 quick-release Technical Memorandums; 149 journal articles; and 610 speeches, lectures, and presentations.

The documented research output of the Center is processed throughout the Langley Scientific and Technical Information Programs Division (STIPD), which is an integral part of the Agency's scientific and technical information program.

STATEMENT OF THE PROBLEM

During the 63-year history of the Langley Research Center, a comprehensive review and evaluation of the Center's STI program has never been conducted. Portions of the Center's STI program have received periodic or occasional

assessment; however, no valid empirical data exist which can be used to evaluate the total program's efficiency and effectiveness.

PURPOSE OF THE STUDY

A comprehensive review/evaluation of the Center's STI program will seek to determine the extent to which the program is meeting the needs of Langley research and professional personnel and the recipients of Langley-generated scientific and technical information, the areas or portions of the program which need improvement, and ways in which the program can be modified to improve its overall efficiency and effectiveness. In conjunction with the evaluation project, a theoretical and analytical review of the NASA formal report as a medium for information transmittal will be conducted. The results of the study will enable NASA to develop a more effective medium for transmitting the results of its research.

An annotated bibliography of literature citations on the topics of the transfer and dissemination of scientific and technical information and the evaluation of scientific and technical programs will be completed and published as a resource for future evaluations.

Significance

This study will provide information which can be used to evaluate and improve the Langley STI program. The information gathered by this study will establish the following:

1. Knowledge of and attitudes toward the Langley STI program by internal and external users

2. Information needs of internal and external users of Langley STI

3. Perceived usability, technical quality, and prestige of Langley formal series reports and journal articles by these users

4. Familiarity, use of, and attitudes toward selected NASA STI products and services by these users

5. Assessment of the services provided by STIPD by Langley researchers, identifying areas of concern and recommendations for improvement

6. Recommendations for improving the effectiveness of the dissemination of Langley STI

7. Effectiveness of the Center's policies and procedures for managing and publishing Langley STI

8. Bibliography of literature citations on the topics of STI transfer and dissemination models, systems, and procedures

9. Bibliography of literature citations on the evaluation of the STI programs, and

10. Effectiveness of the NASA Formal Report as a medium for transmitting information.

Overview

The study will utilize both descriptive and experimental research and will be directed by Thomas E. Pinelli, Assistant Chief, STIPD. A steering committee of 17 individuals will be used to help focus, develop, and guide the study through its completion. Each research division will nominate a representative to serve on the committee. (Mr. George Chandler, Chief, Scientific and Technical Information (STI) Branch, NASA Headquarters, will serve as an ex-officio member of the committee. The individual tasks established for the study will be executed using Langley, Old Dominion University, and professional contract personnel. Steering Committee members are listed in Attachment A.)

Limitations

The study will be limited to the scientific and technical information output of the Center as processed or disseminated through the Langley STI program. The study is not concerned with either informal transfer or secondary application of the Center's research output. The study will involve researchers at the Langley Research Center and NASA information users in other government agencies, industry, and academic institutions.

REVIEW OF RELEVANT RESEARCH

A search is underway to identify literature relevant to the study. The results of Langley and Headquarters' STI studies and assessments conducted since 1968 will be collected and used to help develop the research methodology for the study. A review of existing systems and models for transferring and disseminating scientific and technical information and evaluating scientific and technical information programs will be undertaken. In addition, an annotated bibliography of literature citations on the topics of the transfer, dissemination, and evaluation of scientific and technical information programs will be completed.

RESEARCH METHODOLOGY

The study will investigate the effectiveness and efficiency of the Center's scientific and technical information program, with particular emphasis placed on improving the effectiveness of the dissemination process. The specific actions to be taken are described in the following phases.

Phase I: Knowledge and Attitudes Survey, Langley Research Personnel

Phase I of the review and evaluation project requires an assessment of the adequacy of the Center's STI program in meeting the needs of Langley research and professional personnel. Areas of the program which need improvement will be identified and ways in which the program can be made more effective will be recommended. This task involves (1) determining through open-ended questions during in-depth interviews the areas and dimensions of the program which researchers consider important, (2) constructing a closed-ended survey to be distributed to all research personnel, (3) tabulating and analyzing the responses to the closed-ended questions and compiling and analyzing the proposed changes and recommendations solicited by several open-ended questions and, (4) presenting the findings of the questionnaire in a final report.

The outcome of Phase I will be an evaluation of Langley's and the Agency's programs for meeting the needs of Langley research and professional personnel.

Phase II: Audit of Publication Process

Phase II of the review and evaluations project requires an audit or management analysis of the policies, procedures, and practices used by the Langley Research Center to process, publish, or otherwise handle scientific and technical information. This task involves (1) identifying the various media used by the Center to output its scientific and technical information; (2) compiling all regulations, policies, and instructions applicable to these media; (3) documenting the procedures as currently prescribed; (4) comparing current or actual practices with published management instructions to identify discrepancies or gaps in procedural guidance; and (5) recommending additional or modified procedures.

The outcome or stated purpose of the task is to define the total current procedural framework for processing, publishing, or otherwise handling Langley's scientific information and to supplement existing practices and procedures to create a comprehensive, effective, understandable, and practical framework covering the handling of all research output.

Phase III: Audit of the Report and Manuscript Control Office (RAMCO)

Phase III of the review and evaluation project requires an "audit" or management analysis of the policies, procedures, and practices used by RAMCO (Report and Manuscript Control Office) to manage and report the Center's scientific and technical information output.

The audit involves (1) documenting the current manual system using flowcharts, tables, and other systems analysis tools and techniques; (2) determining whether changes to the current manual system are necessary and justifiable; (3) proposing a new manual or automated (internal or external) system with appropriate justification for selection; (4) examining the feasibility of in-house automation capabilities; and (5) presenting the procedural framework, underlying models, analysis, comments, and recommendations in a final report.

The outcome or stated purpose of the audit will be an analysis and documentation of the current RAMCO operations, identifying areas for potential improvement including possible automation. The audit will emphasize the records management aspect of the operation.

Phase IV: Knowledge and Attitudes Survey, Industrial and Academic Personnel

Phase IV of the review and evaluation project requires an assessment of the benefits, usage, and perceived quality of the NASA/Langley STI Program and STI output by recipients/users in industry, government, and academia. Since the Langley STI program is an integral part of the Agency's STI program, NASA Headquarters has requested that the survey used by the consulting firm include questions pertaining to the Agency-wide STI program and output.

This task involves (1) preliminary telephone interviewing of NASA STI users to supply both content and direction for a closed-ended questionnaire, (2) constructing a closed-ended questionnaire to determine the extent to which the program is meeting the needs of industrial and academic users of NASA/Langley STI, (3) tabulating and analyzing the responses to the questionnaire, and (4) presenting the findings of the questionnaire in a final report.

The outcome of Phase IV will be an assessment of Langley's and the Agency's programs for meeting the needs of non-NASA users of NASA STI products, services, and outputs.

Phase V: Bibliography

Phase V of the review and evaluation project requires a bibliography of literature citations on the topics of the transfer and dissemination of scientific and technical information and the evaluation of scientific and technical programs.

Phase VI: The NASA Formal Report

Part I: Effectiveness of the NASA Formal Report

Part I of the review and evaluation project requires a comprehensive evaluation of the NASA formal report as an effective medium for transmitting scientific and technical information. This task involves (1) developing criteria for the structure and use of the various report elements, (2) analyzing the relationship of those parts within the total report context, and (3) examining the overlapping areas of verbal and graphic presentation to determine the validity of the present format and/or possible modification.

The outcome or stated purpose of this evaluation will be the establishment of benchmarks by which the NASA report can be evaluated.

Part II: Quantitative and Qualitative Criteria for Evaluation (Bibliography, Index, and Tables)

Part II of the review and evaluation project requires a theoretical and analytical review of the formal report as a medium for information transmittal.

This task includes (1) obtaining, through a manual and computer search, an exhaustive bibliography of literature and (2) describing in quantitative terms the usage of report components in the report environment. The bibliography will contain (1) an index of reports produced by government, colleges, and private enterprise (acquired during prior research); (2) literature which describes the usage of components in the scientific/technical report; and (3) literature which pertains to the evaluation of these communications elements in the scientific report.

The outcome of the review process will be the development of criteria for efficient report organization.

Part III: A Review Assessment and Recommendations

Part III of the review and evaluation project requires an assessment of the overall report organization, the component parts of the report, and the relationship of those parts within the total report context. This task includes (1) contrasting other industry and agency reports (illustrated in prior research) with the NASA report, (2) determining which evaluative criteria can be applied to the formal evaluation and possible modification of the NASA/Langley technical report format, (3) establishing a methodology for evaluating the NASA report format, (4) outlining a sequence for the component parts and spelling out what each should include, and (5) preparing and presenting a final report.

The outcome of this phase will be a suggested outline for a sequence and hierarchy of parts for specific users and a series of criteria for graphic and verbal elements.

SCHEDULES - PHASES

Phase/Title	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Phase I Knowledge and Attitudes Survey, Langley Research Personnel			⊢	—	—	—	—	—				
Phase II Systems Analysis: Audit of Publication Process				⊢	—	—	—	—	—	—		
Phase III Systems Analysis: Audit of the Report and Manuscript Control Office (RAMCO)									⊢	—	—	—
Phase IV Knowledge and Attitudes Survey, Industrial and Academic Personnel										⊢	—	—
Phase V Annotated Bibliography	⊢	—	—	—	—	—	—	—	—	—	—	—
Phase VI The NASA Formal Report								⊢	—	—	—	—
Part I: Effectiveness of the NASA Formal Report								⊢	—	—		
Part II: Quantitative and Qualitative Criteria for Evaluation (Bibliography, Index, and Tables)									⊢	—	—	
Part III: A Review Assessment and Recommendations									⊢	—	—	—

COSTS

LaRC

Obligated for:

Phase I - Knowledge and Attitudes Survey, Langley Research Personnel
Phase II - Audit of Publication Processes
Phase III - Audit of the Report and Manuscript Control Office (RAMCO)
Phase IV - Knowledge and Attitudes Survey, Industrial and Academic Personnel
Phase V - Annotated Bibliography

Headquarters

Obligated for:

Phase VI - The NASA Formal Report

REPORTING

The project will be documented in a final summary report. The report will be divided into sections containing a review of related research; presentation and analysis of the data; and summary, findings, conclusions, and recommendations. Where possible, phases of the project will be presented in individual articles. A bibliography of literature citations on the topics of the transfer and dissemination of scientific and technical information and the evaluation of scientific and technical information programs will be prepared and published as a NASA Reference Publication (RP).

ATTACHMENT A

The following names constitute the steering committee representatives by division.

Name	Division	
Roger Breckenridge	(FED)	- Flight Electronics
Susan Voigt	(ACD)	- Analysis and Computation
Jag J. Singh	(IRD)	- Instrument Research
Edwin C. Foudriat	(FDCD)	- Flight Dynamics and Control
Wilbur B. Fichter	(MD)	- Materials
Harvey Hubbard - (Retired) Donald Lansing	(ANRD)	- Acoustics and Noise Reduction
Harvey McComb	(SMD)	- Structural Mechanics
Harry H. Heyson	(ASD)	- Aeronautical Systems
Ralph Bielat - (Retired) Joe Stickle	(FltMD)	- Flight Mechanics
Lowell Hasel	(HSAD)	- High-Speed Aerodynamics
Larry Edwards	(STAD)	- Subsonic-Transonic Aerodynamics
Fred Smith	(ODS)	- Office of the Director for Space
Bob Wright	(SSD)	- Space Systems
H. Scott Wagner	(MATD)	- Marine and Applications Technology
Joel Levine	(AESD)	- Atmospheric Environmental Science
Jane Hess	(MSD)	- Management Support Division, Technical Library Branch

*Ex-officio members

John Stokes

Frank Hohl

Dick Layman

Bill Simkins

Brenda Spencer

APPENDIX B

A 1-year project to review and evaluate the Center's scientific and technical information (STI) program began in February 1980. The purpose of the project is to identify ways in which the program can be modified to meet the needs of Langley research personnel and recipients of Langley-generated scientific and technical information.

The first phase of the review involves obtaining data from LaRC AST's concerning their knowledge of and attitudes toward the Langley STI Program. Personal interviews and mail-in questionnaires will be used to obtain the desired data. Your name has been selected at random from a list of Langley AST's to participate in the personal interviews. The confidential responses from all interviewees will be tabulated and analyzed to provide valuable insights into the perceived operation of the Langley program.

The interviewing will begin Friday, May 9th, and continue through the week of May 12-16th. An independent research firm will conduct the half-hour interviews. As a member of the interview sample, you are requested to call Ms. Pat Hinnebusch at STIPD, 2691, to confirm a convenient time for your interview.

I endorse this effort and request your participation and cooperation. The interviews are critical, since they provide a foundation for the remainder of the project. The intended outcome of the review is a list of recommendations which, when implemented, will produce a more efficient system, geared to meet the needs of STI users.

Sincerely,

Donald P. Hearth
Director

APPENDIX C

INTERVIEW FORMAT QUESTIONNAIRE

1. Number of years at Langley Research Center?

2. Area of research specialty?

3. Do you publish any of your research? (If NO, why?) Where or how do you publish?

4. What changes, if any, would you like to see made in the review and publication process? (That is, while the paper is still here at NASA?)

5. How are the NASA formal series documents distributed? How do you think they should be distributed--likes and dislikes?

   Next, I'd like to ask you some questions about services that support publishing and research efforts:

6. How do you feel about graphics support?

7. How do you feel about the technical editing services?

8. How do you feel about the printing/reproduction services?

9. How do you feel about the photographic services?

10. How do you feel about the Library services and materials?

11. Comparing publishing through NASA formal series documents (e.g., T.M., T.P., etc.), journal articles, and conference proceedings, which do you prefer and why?

12. Do you use STAR, SCAN, IAA, or RECON in you work? Which ones? Why? What do you like/dislike about them?

NOTE: To insure confidentiality, questions 1 and 2 have not been tabulated.

APPENDIX D

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

NASA

Reply to Attn of

July 1, 1980

TO:

FROM: 180A/Chief, Scientific and Technical Information Programs Division

SUBJECT: Scientific and Technical Information Survey

A 1-year project to review and evaluate the Center's scientific and technical information (STI) program began in February 1980. In conjunction with the review project, a mail-in questionnaire will be sent to LaRC AST's to obtain data concerning their attitudes toward the Langley STI program and methods for improving it.

Your name has been selected at random to critique the questionnaire for relevance and clarity before distribution to other researchers. Please return the completed questionnaire with your comments/suggestions by July 9, 1980 to:

Continental Research
P. O. Box 6112
Norfolk, VA 23508

If you have any questions, please call Mrs. Nancy Glassman, Continental Research, 1-489-4887. After the critiques are received, a representative of Continental Research will contact some researchers to further discuss the questionnaire.

The intended outcome of the review is a list of recommendations which, when implemented, will produce a more efficient system, geared to meet the needs of STI users.

Burnett W. Peters

Burnett W. Peters
2691

APPENDIX E

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

NASA

Reply to Attn of

A 1-year project to review and evaluate the Center's scientific and technical information (STI) program began in February 1980. The purpose of the project is to identify ways in which the program can be modified to meet the needs of Langley research personnel and recipients of Langley-generated scientific and technical information.

The first phase of the review involves obtaining data from LaRC AST's concerning their attitudes toward the Langley STI program. Mail-in questionnaires will be used to obtain the desired data. Your name has been selected at random to participate in the questionnaire portion of the review. The confidential responses will be tabulated and analyzed by an independent research firm to provide valuable insights into the perceived operation of the Langley program.

Please complete and return the survey by August 4, 1980 to Continental Research, Box 6112, Norfolk, VA 23508, using the prepared enclosed envelope.

I endorse this effort and request your participation and cooperation. The intended outcome of the review is a list of recommendations which, when implemented, will produce a more efficient system, geared to meet the needs of STI users.

Sincerely,

Donald P. Hearth
Director

Enclosure

APPENDIX E

INSTRUCTIONS: Using a pencil, check "✓" the box that best represents your opinions.

If after reading this survey, you find that no items apply to you, please write "not applicable" and return the survey in the enclosed envelope.

For example:

								NO OPINION
SCIENTIFIC RESEARCH IS	**GOOD**	☑ 1	☐ 2	☐ 3	☐ 4	☐ 5	**BAD**	☐ 6

Check 1 for "VERY GOOD" **Check 4 for "SOMEWHAT BAD"**
Check 2 for "SOMEWHAT GOOD" **Check 5 for "VERY BAD"**
Check 3 for "NEITHER GOOD NOR BAD" **Check 6 for "NO OPINION"**

NASA Formal Series Publications (e.g. TP's, RP's, SP's)
(Technical Editing Committee)

			VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION
1.	Technical Editing Committee members who review NASA formal series publications take the task	Seriously	☐	☐	☐	☐	☐	Lightly	☐
2.	Technical Editing Committee members who review my research for accuracy and content are	Qualified	☐	☐	☐	☐	☐	Unqualified	☐
3.	Significant revision of the technical review process is	Necessary	☐	☐	☐	☐	☐	Unnecessary	☐

Research Review Process (Reports, Articles, Meeting Papers)
(Supervisor's Review)

4.	The "chain of command" review (e.g.,branch head, division chief, etc.) is	Necessary	☐	☐	☐	☐	☐	Unnecessary	☐
5.	Regarding deadlines, the individuals in the "chain of command" review are	Sensitive	☐	☐	☐	☐	☐	Insensitive	☐
6.	Significant revision of the technical review process used by my division is	Necessary	☐	☐	☐	☐	☐	Unnecessary	☐

LaRC Publication Guidelines for Publishing Scientific and Technical Information

7.	Publication guidelines are	Available	☐	☐	☐	☐	☐	Unavailable	☐
8.	The guidelines are	Clear	☐	☐	☐	☐	☐	Unclear	☐
9.	The guidelines	Facilitate Publishing	☐	☐	☐	☐	☐	Inhibit Publishing	☐
10.	An LaRC handbook, containing guidelines for all publications and secretarial instructions, is	Necessary	☐	☐	☐	☐	☐	Unnecessary	☐
11.	Periodic orientation lectures explaining the publication process to research personnel are	Necessary	☐	☐	☐	☐	☐	Unnecessary	☐
12.	An individual in each research organization who thoroughly understands these guidelines is	Necessary	☐	☐	☐	☐	☐	Unnecessary	☐

APPENDIX E

Technical Library (books, documents, periodicals, interlibrary loan, literature searches)

			VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION
13.	In assisting researchers, the staff is	Cooperative	☐	☐	☐	☐	☐	Uncooperative	☐
14.	The library coverage (collection) in my research field is Specify field _____	Adequate	☐	☐	☐	☐	☐	Inadequate	☐
15.	Materials in the collection are provided	Quickly	☐	☐	☐	☐	☐	Slowly	☐
16.	Materials requiring interlibrary loan are provided	Quickly	☐	☐	☐	☐	☐	Slowly	☐
17.	Materials to be purchased are provided	Quickly	☐	☐	☐	☐	☐	Slowly	☐

Research Support Services Provided By Scientific and Technical Information Programs Division (STIPD)

Photography (still and sequence photography, slides, transparencies, B/W and color prints) done by Photographics Branch, STIPD.

18.	The staff's suggestions are	Useful	☐	☐	☐	☐	☐	Useless	☐
19.	Photographic turnaround is	Fast	☐	☐	☐	☐	☐	Slow	☐
20.	Regarding deadlines, the staff is	Sensitive	☐	☐	☐	☐	☐	Insensitive	☐
21.	Photographic work is	Satisfactory	☐	☐	☐	☐	☐	Unsatisfactory	☐

Graphic Arts (Vugraphs, figures, slides, charts, illustrations) done by Graphics Branch, STIPD

22.	The staff's suggestions are	Useful	☐	☐	☐	☐	☐	Useless	☐
23.	Graphic turnaround is	Fast	☐	☐	☐	☐	☐	Slow	☐
24.	Regarding deadlines, the staff is	Sensitive	☐	☐	☐	☐	☐	Insensitive	☐
25.	Graphic Services are	Satisfactory	☐	☐	☐	☐	☐	Unsatisfactory	☐

Printing/Reproduction (printing, duplicating, xerox, diazo) done by Publications Branch, STIPD

26.	The staff is	Cooperative	☐	☐	☐	☐	☐	Uncooperative	☐
27.	Regarding deadlines, the staff is	Sensitive	☐	☐	☐	☐	☐	Insensitive	☐
28.	Printing/Reproduction turnaround is	Fast	☐	☐	☐	☐	☐	Slow	☐
29.	Printing/Reproduction work is	Satisfactory	☐	☐	☐	☐	☐	Unsatisfactory	☐

Technical Editing (grammar, syntax, format, SI units) done by Technical Editing Branch, STIPD

30.	Technical Editing turnaround is	Fast	☐	☐	☐	☐	☐	Slow	☐
31.	Regarding deadlines, the staff is	Sensitive	☐	☐	☐	☐	☐	Insensitive	☐
32.	Staff suggestions for improving form, grammar, and punctuation are	Satisfactory	☐	☐	☐	☐	☐	Unsatisfactory	☐
33.	The staff makes my papers	Easy to Read	☐	☐	☐	☐	☐	Difficult To Read	☐
34.	The intended meaning of sentences is	Unchanged	☐	☐	☐	☐	☐	Changed	☐

APPENDIX E

Perceived Image of LaRC Scientific and Technical Information

			VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION
35.	When compared to other journal articles in my discipline, the prestige of LaRC-authored journal articles is	High	☐	☐	☐	☐	☐	Low	☐
36.	When compared to other literature in my discipline, the prestige of LaRC formal series publications (e.g., TP's, TM's, etc.) is	High	☐	☐	☐	☐	☐	Low	☐
37.	As journal references in my field of research, LaRC formal series publications are	Acceptable	☐	☐	☐	☐	☐	Unacceptable	☐
38.	The quality of the material produced through the review and publication process is	High	☐	☐	☐	☐	☐	Low	☐
39.	The organization (format) of LaRC formal series publications makes readability	Easy	☐	☐	☐	☐	☐	Difficult	☐
40.	The data in LaRC formal series publications are	Sufficient	☐	☐	☐	☐	☐	Insufficient	☐
41.	After being written by the author, LaRC formal series documents are published	Quickly	☐	☐	☐	☐	☐	Slowly	☐
42.	Distribution within my discipline of LaRC formal series publications is	Adequate	☐	☐	☐	☐	☐	Inadequate	☐

Scientific and Technical Information (STI) Products and Services

								Unfamiliar With
43.	Training sessions to orient research personnel to NASA STI products and services are	Necessary	☐	☐	☐	☐	☐	Unnecessary	☐
44.	In my research work, NASA STI products and services are	Important	☐	☐	☐	☐	☐	Unimportant	☐

		ALWAYS	USUALLY	SOMETIMES	NEVER	Unfamiliar With
45.	When I do research, I use STAR (Scientific and Technical Aerospace Reports), the NASA announcement journal for report literature	☐	☐	☐	☐	☐
46.	When I do research, I use IAA (International Aerospace Abstracts), the NASA announcement journal for periodicals, meeting papers, and conference proceedings	☐	☐	☐	☐	☐
47.	When I do research, I use SCAN (Selected Current Aerospace Notices), a NASA current awareness publication	☐	☐	☐	☐	☐
48.	When I do research, I use RECON, NASA's computerized, online, interactive system for information search and retrieval	☐	☐	☐	☐	☐

APPENDIX E

Background

The purpose of these questions is to determine whether people with different backgrounds also have different opinions. The answers will **NOT** be used to try to identify anyone.

49. Where or how do you publish? (Check one only.)

___ 1 Do not publish

___ 2 NASA Formal Series and Journals and Conferences/Meetings

___ 3 NASA Formal Series and Journals Only

___ 4 NASA Formal Series Only

___ 5 Conferences/Meetings and Journals Only

___ 6 NASA Formal Series and Conferences/Meetings Only

___ 7 Journals Only

___ 8 Conferences/Meetings Only

How many of the following have you written in the past 3 years? (Indicate response in blank.)

___ (50–51) NASA Formal Series Reports (TP's, TM's, RP's, SP's, etc.)

___ (52–53) Journal Articles

___ (54–55) NASA Quick Release Technical Memorandums

___ (56–57) Conference/Meeting Papers

How many technical/professional conferences (other than ones held at LaRC) have you attended within the last 3 years? ___ (58–59)

How many times have you served on a technical editorial committee during the last 3 years? ___ (60–61)

How many times have you chaired a technical editorial committee during the past 3 years? ___ (62–63)

Considering the scientific and technical information that you have used for your research during the past 3 years, what percentage was NASA-generated or -sponsored? ___ (64–66) %

		VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION
67. In terms of my professional advancement (promotion) at LaRC, publishing the results of my research is	Important	☐	☐	☐	☐	☐	Unimportant	☐
68. In regard to publishing through NASA formal series, supervisors, up through division level, are	Supportive	☐	☐	☐	☐	☐	Nonsupportive	☐

69. Years of professional work experience at LaRC (Check one only.)

___ 1 less than 1 year

___ 2 1 – 5 years

___ 3 6 – 10 years

___ 4 11 – 15 years

___ 5 16 – 20 years

___ 6 21 + years

70. Position within the research organization (Check one only.)

___ 1 Individual contributor

___ 2 Unit, group, or Section Head

___ 3 Branch/Assistant Branch Head

___ 4 Division/Assistant Division Chief

71. Research organization to which assigned (Check one only).

___ 1 ACD

___ 2 IRD

___ 3 FDCD

___ 4 FED

___ 5 TCVPO

___ 6 MD

___ 7 ANRD

___ 8 SMD

___ 9 LAD

___ 10 ASD

___ 11 FIT. MD

___ 12 HSAD

___ 13 STAD

___ 14 AESD

___ 15 SSD

___ 16 MATD

___ 17 OTHER (Specify)

APPENDIX E

Program improvement *(Please fill this out last.)*

1. Are there additional information products and services that you think should be provided by the NASA Scientific and Technical Information system?

_____

_____

_____

_____

_____

2. Are there areas of the Langley Scientific and Technical Information program not previously mentioned which are in need of change or improvement?

_____

_____

_____

_____

_____

3. What additional recommendations do you have for improving the review and publication process?

_____

_____

_____

_____

_____

APPENDIX F

ANALYSIS OF THE CLOSED-ENDED QUESTIONS: n = 300

INSTRUCTIONS: Using a pencil, check "✓" the box that best represents your opinions.

If after reading this survey, you find that no items apply to you, please write "not applicable" and return the survey in the enclosed envelope.

For example:

								NO OPINION
SCIENTIFIC RESEARCH IS	GOOD	☑ 1	☐ 2	☐ 3	☐ 4	☐ 5	BAD	☐ 6

Check 1 for "VERY GOOD"
Check 2 for "SOMEWHAT GOOD"
Check 3 for "NEITHER GOOD NOR BAD"
Check 4 for "SOMEWHAT BAD"
Check 5 for "VERY BAD"
Check 6 for "NO OPINION"

NASA Formal Series Publications (e.g. TP's, RP's, SP's) *(Technical Editing Committee)*

			VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION
1.	Technical Editing Committee members who review NASA formal series publications take the task	Seriously	44	50	2	3	1	Lightly	33
2.	Technical Editing Committee members who review my research for accuracy and content are	Qualified	38	54	5	3	0	Unqualified	47
3.	Significant revision of the technical review process is	Necessary	11	23	20	23	23	Unnecessary	46

Research Review Process (Reports, Articles, Meeting Papers) *(Supervisor's Review)*

4.	The "chain of command" review (e.g., branch head, division chief, etc.) is	Necessary	39	41	7	9	4	Unnecessary	17
5.	Regarding deadlines, the individuals in the "chain of command" review are	Sensitive	17	44	13	20	6	Insensitive	24
6.	Significant revision of the technical review process used by my division is	Necessary	14	20	24	22	20	Unnecessary	29

LaRC Publication Guidelines for Publishing Scientific and Technical Information

7.	Publication guidelines are	Available	47	42	4	5	2	Unavailable	27
8.	The guidelines are	Clear	29	48	9	9	4	Unclear	31
9.	The guidelines	Facilitate Publishing	15	37	36	10	2	Inhibit Publishing	40
10.	An LaRC handbook, containing guidelines for all publications and secretarial instructions, is	Necessary	49	29	11	5	6	Unnecessary	22
11.	Periodic orientation lectures explaining the publication process to research personnel are	Necessary	12	39	18	18	22	Unnecessary	12
12.	An individual in each research organization who thoroughly understands these guidelines is	Necessary	43	29	11	6	10	Unnecessary	18

APPENDIX F

Technical Library (books, documents, periodicals, interlibrary loan, literature searches)

			VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION
13.	In assisting researchers, the staff is	Cooperative	83	13	3	1	0	Uncooperative	15
14.	The library coverage (collection) in my research field is Specify field _____	Adequate	57	32	5	4	1	Inadequate	24
15.	Materials in the collection are provided	Quickly	46	40	9	5	0	Slowly	12
16.	Materials requiring interlibrary loan are provided	Quickly	23	41	17	12	7	Slowly	75
17.	Materials to be purchased are provided	Quickly	8	26	21	24	22	Slowly	70

Research Support Services Provided By Scientific and Technical Information Programs Division (STIPD)

Photography (still and sequence photography, slides, transparencies, B/W and color prints) done by Photographics Branch, STIPD.

18.	The staff's suggestions are	Useful	39	41	17	2	0	Useless	64
19.	Photographic turnaround is	Fast	28	42	17	8	5	Slow	36
20.	Regarding deadlines, the staff is	Sensitive	44	41	7	7	1	Insensitive	45
21.	Photographic work is	Satisfactory	54	32	8	5	1	Unsatisfactory	32

Graphic Arts (Vugraphs, figures, slides, charts, illustrations) done by Graphics Branch, STIPD

22.	The staff's suggestions are	Useful	45	41	10	3	1	Useless	72
23.	Graphic turnaround is	Fast	17	45	19	14	5	Slow	63
24.	Regarding deadlines, the staff is	Sensitive	39	41	12	6	2	Insensitive	64
25.	Graphic Services are	Satisfactory	43	35	11	8	3	Unsatisfactory	62

Printing/Reproduction (printing, duplicating, xerox, diazo) done by Publications Branch, STIPD

26.	The staff is	Cooperative	48	36	10	5	1	Uncooperative	28
27.	Regarding deadlines, the staff is	Sensitive	42	42	7	7	2	Insensitive	31
28.	Printing/Reproduction turnaround is	Fast	36	45	12	4	3	Slow	26
29.	Printing/Reproduction work is	Satisfactory	46	42	8	2	2	Unsatisfactory	24

Technical Editing (grammar, syntax, format, SI units) done by Technical Editing Branch, STIPD

30.	Technical Editing turnaround is	Fast	16	46	24	11	2	Slow	70
31.	Regarding deadlines, the staff is	Sensitive	34	49	13	3	0	Insensitive	80
32.	Staff suggestions for improving form, grammar, and punctuation are	Satisfactory	50	39	9	1	0	Unsatisfactory	69
33.	The staff makes my papers	Easy to Read	28	45	25	1	1	Difficult To Read	71
34.	The intended meaning of sentences is	Unchanged	38	37	20	4	1	Changed	69

APPENDIX F

Perceived Image of LaRC Scientific and Technical Information

		VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY		NO OPINION
35. When compared to other journal articles in my discipline, the prestige of LaRC authored journal articles is	High	34	36	20	7	3	Low	58
36. When compared to other literature in my discipline, the prestige of LaRC formal series publications (e.g., TP's, TM's, etc.) is	High	26	30	17	15	12	Low	42
37. As journal references in my field of research, LaRC formal series publications are	Acceptable	53	30	10	5	3	Unacceptable	41
38. The quality of the material produced through the review and publication process is	High	35	47	14	3	0	Low	33
39. The organization (format) of LaRC formal series publications makes readability	Easy	32	46	17	4	1	Difficult	28
40. The data in LaRC formal series publications are	Sufficient	40	43	14	3	0	Insufficient	41
41. After being written by the author, LaRC formal series documents are published	Quickly	7	27	23	28	16	Slowly	44
42. Distribution within my discipline of LaRC formal series publications is	Adequate	18	37	18	16	10	Inadequate	53

Scientific and Technical Information (STI) Products and Services

43. Training sessions to orient research personnel to NASA STI products and services are	Necessary	20	35	23	11	11	Unnecessary	46
44. In my research work, NASA STI products and services are	Important	33	38	21	4	3	Unimportant	Unfamiliar With 52

	ALWAYS	USUALLY	SOMETIMES	NEVER	Unfamiliar With
45. When I do research, I use STAR (Scientific and Technical Aerospace Reports), the NASA announcement journal for report literature	18	37	37	8	25
46. When I do research, I use IAA (International Aerospace Abstracts), the NASA announcement journal for periodicals, meeting papers, and conference proceedings	15	31	41	14	36
47. When I do research, I use SCAN (Selected Current Aerospace Notices), a NASA current awareness publication	16	16	39	29	92
48. When I do research, I use RECON, NASA's computerized, online, interactive system for information search and retrieval	17	20	48	15	55

APPENDIX F

Background

The purpose of these questions is to determine whether people with different backgrounds also have different opinions. The answers will **NOT** be used to try to identify anyone.

n = 300

Question # = Variable #

49. Where or how do you publish? (Check one only.)

- 12 (1) Do not publish
- 53 (2) NASA Formal Series and Journals and Conferences/Meetings
- 2 (3) NASA Formal Series and Journals Only
- 8 (4) NASA Formal Series Only
- 7 (5) Conferences/Meetings and Journals Only
- 14 (6) NASA Formal Series and Conferences/Meetings Only
- 1 (7) Journals Only
- 2 (8) Conferences/Meetings Only

Variable #

How many of the following have you written in the past 3 years? (Indicate response in blank.)

		None	1 or More
50	____ (50 51) NASA Formal Series Reports (TP's, TM's, RP's, SP's, etc.)	44%	56%
51	____ (52 53) Journal Articles	61	39
52	____ (54 55) NASA Quick Release Technical Memorandums	72	28
53	____ (56 57) Conference/Meeting Papers	37	63

		None	1 or More
54	How many technical/professional conferences (other than ones held at LaRC) have you attended within the last 3 years? ____ (58 59)	28%	72%
55	How many times have you served on a technical editorial committee during the last 3 years? ____ (60 61)	33	67
56	How many times have you chaired a technical editorial committee during the past 3 years? ____ (62 63)	69	21

57. Considering the scientific and technical information that you have used for your research during the past 3 years, what percentage was NASA generated or sponsored? ____ (64 66) % (See typed sheet)

			PERCENTAGES					ABSOLUTE NUMBERS
			VERY	SOMEWHAT	NEITHER	SOMEWHAT	VERY	NO OPINION
58	67. In terms of my professional advancement (promotion) at LaRC, publishing the results of my research is	Important	60	23	9	4	5	Unimportant 13
59	68. In regard to publishing through NASA formal series, supervisors, up through division level, are	Supportive	46	28	13	8	5	Nonsupportive 25

PERCENTAGES

60 69. Years of professional work experience at LaRC (Check one only.)

- 4 (1) less than 1 year
- 7 (2) 1 – 5 years
- 9 (3) 6 – 10 years
- 18 (4) 11 – 15 years
- 32 (5) 16 – 20 years
- 31 (6) 21 + years

PERCENTAGES

61 70. Position within the research organization (Check one only.)

- 4 (1) Individual contributor
- 7 (2) Unit, group, or Section Head
- 6 (3) Branch/Assistant Branch Head
- 3 (4) Division/Assistant Division Chief

PERCENTAGES

62 71. Research organization to which assigned (Check one only).

- 6 (1) ACD
- 7 (2) IRD
- 12 (3) FDCD
- 9 (4) FED
- 1 (5) TCVPO
- 7 (6) MD
- 7 (7) ANRD
- 2 (8) SMD
- 5 (9) LAD
- 2 Refusals
- 2 (10) ASD
- 4 (11) FIT MD
- 11 (12) HSAD
- 8 (13) STAD
- 5 (14) AESD
- 9 (15) SSD
- 4 (16) MATD
- 6 (17) OTHER (Specify)